

PlantSEED Workshop

Introduction / Overview

Introductions and Sponsors

- Sponsors:
 - National Science Foundation
 - Argonne National Laboratory
 - University of Florida
 - Institute of Food and Agricultural Sciences
- NSF Project:
 - The B vitamin/cofactor network: command and control of metabolism in changing conditions
 - PI: Andrew Hanson
 - Co-Pis: Christopher Henry, Donald McCarty, Jess Gregory



Workshop Schedule

- Day 1: Annotation and Reconstruction
 - Overview and Login
 - Automated Functional Annotation
 - Editing Functional Annotation
 - Metabolic Reconstruction
- Day 2: Metabolic Modeling
 - Overview
 - Flux Balance Analysis and Gapfilling
 - Future of PlantSEED

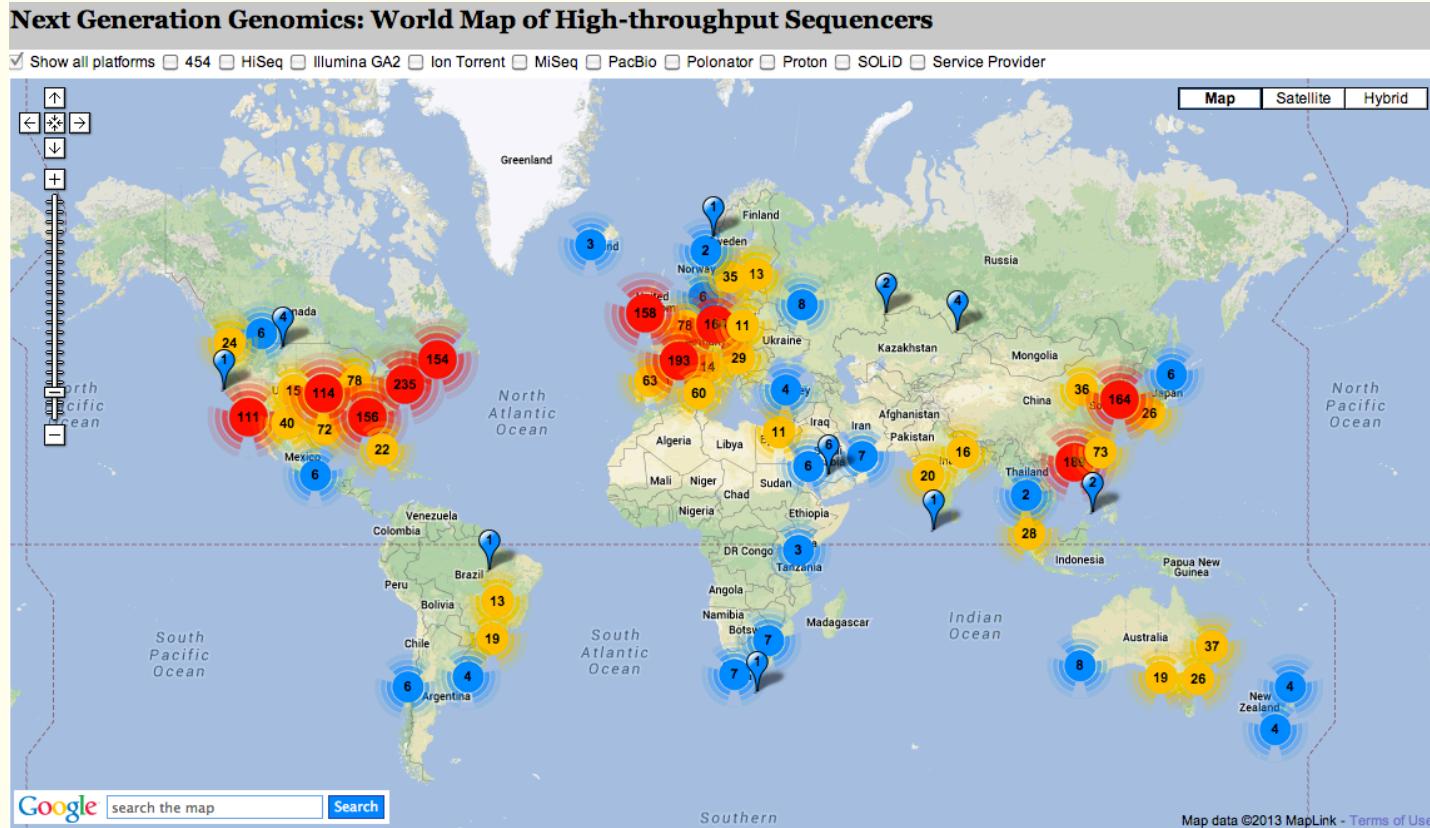
PlantSEED Team and Contributors

- Chris Henry (ANL)
 - Sam Seaver, Neal Conrad, Janaka Edirisinghe
- Andrew Hanson & Valerie de Crecy-Lagard (UF)
 - Claudia Lerma-Ortiz, Oceane Frelin, Louis Bradbury, Thomas Neihaus, Ghulam Hasnain, Basma El Yacoubi, Remi Zallot
- Doreen Ware (CSHL)
 - Shiran Pasternak
- Ross Overbeek (ANL/FIG)
 - Gordon Pusch, Robert Olson
- Svetlana Gerdes (FIG)

History of SEED

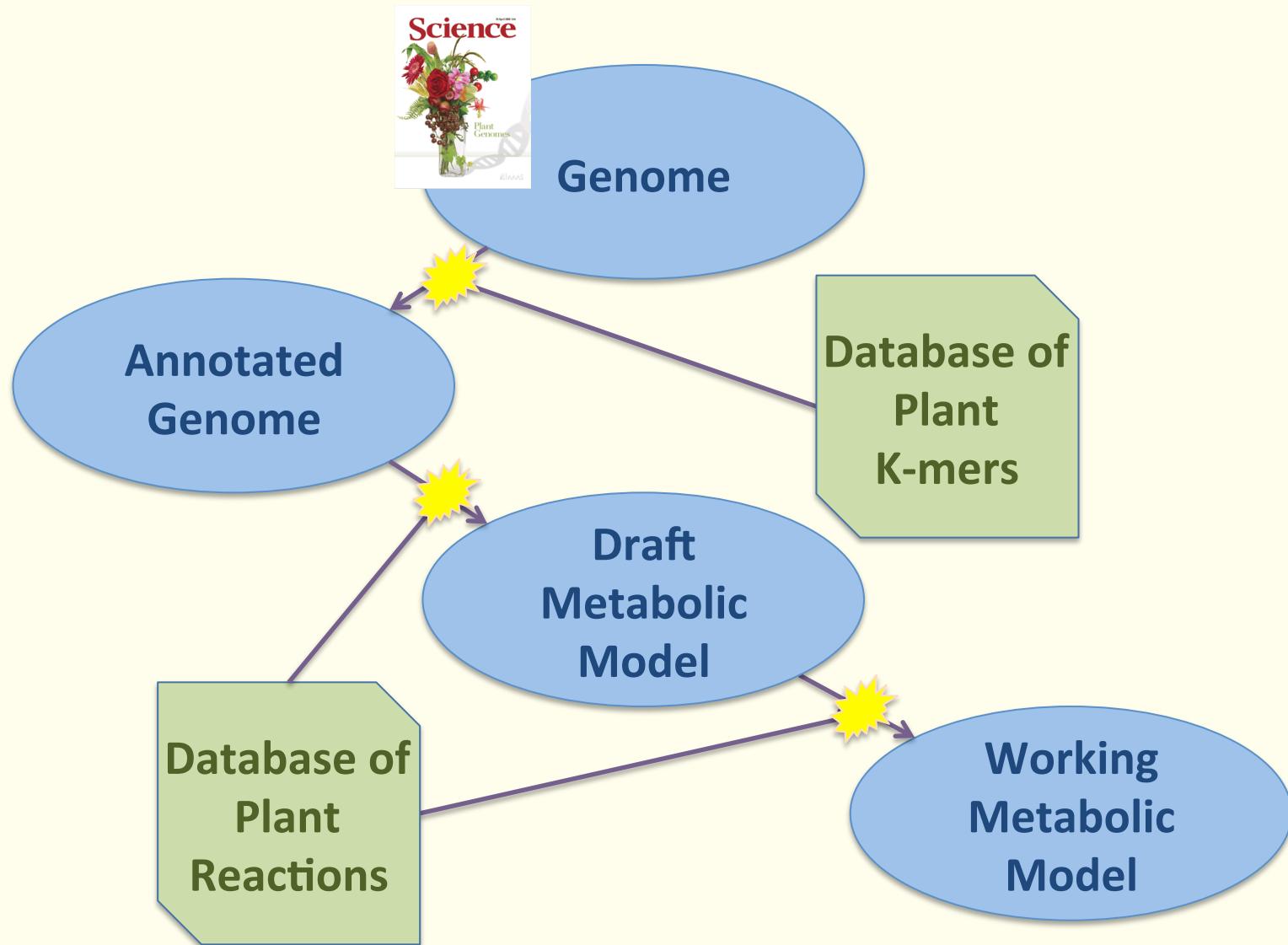
- 1980: Ross Overbeek joins ANL
- 1989: Ross Overbeek and Carl Woese collaborate on computational support of rRNA alignments
- Series of Bioinformatics Systems developed:
 - 1994: PUMA
 - 1996: WIT
 - 1998: ERGO
 - 2003: SEED
- 2003: Fellowship for Interpretation of Genomes
 - “Project To Annotate 1000 Genomes”
- 2010: ModelSEED published
- 2014: PlantSEED published

Growth in Next Generation Sequencing for Plants



Genomes Online: 1,052 sequencing projects in Streptophyta

PlantSEED Workflow



PlantSEED Websites

- ‘Published’ site:
 - <http://plantseed.theseed.org>
 - <http://www.ncbi.nlm.nih.gov/pubmed/24927599>
- Workshop site:
 - <http://plantseed2015.theseed.org/>
 - Will be updated
- Repository:
 - <https://github.com/ModelSEED/PlantSEED/Workshops>
- Modeling and Annotation Interface:
 - <http://plants.theseed.org>

<http://plants.theseed.org>

ModelSEED alpha

About Highlights More Info

ModelSEED alpha

Metabolic Modeling Made Simple.

Sign in with RAST account to continue

RAST Username

*₁

Password

*₁

[Create new account](#)

[Sign in](#)

Or, sign in with:



PATRIC

<http://plants.theseed.org>

The screenshot shows the ModelSEED interface for microbial genomics. The top navigation bar includes links for Biochemistry, Annotations, Genomes, Media, and My Models. On the right, there are buttons for More, save, and RAST. Below the navigation, a sidebar indicates 'Model Analysis (0)'. The main content area is titled 'Microbial Genomes' and prompts the user to 'Select a genome from below to reconstruct'. A section for 'Public Microbes' is shown, featuring a search bar with a dropdown for filters (set to 'Microbes') and a search icon, followed by the text 'Search PATRIC genomes'. The results table displays 1-25 of 33252 results, with navigation links for 'prev' and 'next'. The table columns are Name, ID, Genus, Tax ID, and Contigs. The first five entries are:

Name	ID	Genus	Tax ID	Contigs
'Chrysanthemum coronarium' phytoplasma	1520703.3	Candidatus Phytoplasma	1520703	170
'Nostoc azollae' 0708	551115.6	Trichormus	551115	0
Abiotrophia defectiva ATCC 49176	592010.4	Abiotrophia	592010	8
Acaricomes phytoseiuli DSM 14247	1120917.3	Acaricomes	1120917	64

http://plants.theseed.org

≡ ModelSEED

Biochemistry Annotations Genomes Media My Models More seaver @ RAST

Plant Genomes

Select a genome from below to reconstruct

Public Plants My Plants

 **Arabidopsis lyrata (1.0)**
Arabidopsis lyrata

Links: [PubSEED](#) | [Ensembl](#) | [JGI](#)

[View Model](#) [Copy Genome/Model](#)

 **Arabidopsis thaliana (TAIR 10)**
Arabidopsis thaliana

Links: [PubSEED](#) | [Ensembl](#) | [TAIR](#)

[View Model](#) [Copy Genome/Model](#)

 **Brachypodium distachyon (1.0)**
Brachypodium distachyon (L.) Beauv

Links: [PubSEED](#) | [Gramene](#) | [Ensembl](#) | [BIR](#)

[View Model](#) [Copy Genome/Model](#)

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≡ ModelSEED

Biochemistry Annotations Genomes Media My Models

More seaver RAST

Model Analysis (0)

Plant Genomes

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View Model

Copy Genome/Model

Microbes Plants

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ModelSEED

Biochemistry Annotations Genomes Media My Models More RAST

Model Analysis (0)

Genome Zmays_Thi2

Features Annotations

Search features 1-20 of 908 results < prev next >

Feature	Function	Subsystems
AC234185.1_FC004	CTP synthase (EC 6.3.4.2)	Pyrimidine_de_novo_biosynthesis_in_plants
GRMZM2G055489	Sucrose-phosphate phosphatase (EC 3.1.3.24)	Sucrose_metabolism_in_plants
GRMZM2G130904	Peroxidase (EC 1.11.1.7)	Lignin_biosynthesis_in_plants
GRMZM2G130904	Peroxidase (EC 1.11.1.7)	Lignin_biosynthesis_in_plants
GRMZM2G070422	Enoyl-[acyl-carrier-protein] reductase [NADH] (EC 1.3.1.9)	Fatty_acid_biosynthesis_in_plants_(plastidial)
GRMZM2G070422	Enoyl-[acyl-carrier-protein] reductase [NADH] (EC 1.3.1.9)	Fatty_acid_biosynthesis_in_plants_(plastidial)
GRMZM2G463640	Cytochrome b6-f complex subunit, cytochrome b6	Cytochrome_b6-f_complex_in_plants_(plastidial)_and_cyanobacteria Photosystem_II Photosystem_I
GRMZM2G463640	Cytochrome b6-f complex subunit, cytochrome b6	Cytochrome_b6-f_complex_in_plants_(plastidial)_and_cyanobacteria Photosystem_II Photosystem_I